

CARLSON, GASKEY & OLDS, P.C.**FACSIMILE COVER PAGE**

Date: September 25, 2003	Time:
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Pages (including cover page): //	Client Billing Number: 60,130-391
<p>RE: 09/525,741</p> <p>Per your request, attached is a copy of the appeal brief and certificate of facsimile.</p>	

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UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Griffiths
Serial No.: 09/525,741
Filed: March 14, 2000
Group Art Unit: 3619
Examiner: Royal, P.
Title: AIR SPRING

Box AF
Assistant Commissioner of Patents
Washington, D.C. 20231

APPEAL BRIEF

Dear Sir:

Subsequent to the filing of the Notice of Appeal on December 7, 2001, Appellant hereby submits its brief. Fees in the amount of \$320.00 are authorized to be charged to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

Real Party in Interest

The real party in interest is Meritor Heavy Vehicle Systems Limited the assignee of the entire right and interest in this Application.

Related Appeals and Interferences

There are no related appeals or interferences.

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99AUT080**Status of Claims**

Claims 1-3, and 4 stand finally rejected under 35 U.S.C. §102(b) as being anticipated by *Bates* (3,913,94.); 1-3 and 4 stand finally rejected under 35 U.S.C. §103(a) as being unpatentable over *Bates* in view of *Koschinat* (4,890,823); and claims 5 and 6 stand finally rejected under 35 U.S.C. §103(a) as being unpatentable over *Bates* in view of *Koschinat* (4,890,823) and *Smith* (5,234,203.)

Status of the Amendments

All amendments have been entered.

Summary of the Invention

This invention relates to an air suspension system 10 for a vehicle. The system is fixed to a chassis component 22 of the vehicle, shown schematically. A longitudinal member 14 extends generally lengthways of the vehicle and is pivotally connected within the bracket 12 to a pivot 30. From the pivot 30, the longitudinal member 14 extends rearwardly to mount the air spring 16. An axle assembly 20 of the vehicle is secured to the longitudinal member 14 between the pivot 30 and the air spring 16 by a clamp 21.

The air spring 16 includes an air cell 32 and a piston 34 which act as a compression spring between the longitudinal member 14 and the chassis component 22 to bias the road wheels (not shown) for effective road engagement and to buffer the vehicle against axle and wheel vibration.

Referring to the sectional view of Figure 3a, the air cell 32 is a substantially tubular rubber member having a first end 48 and a second end 50. A first portion 52 substantially follows the length of the piston 34 until it folds over at an intermediate point 54. The intermediate point changes with piston movement. A second portion 56 extends from the intermediate point 54 and overlays the first portion 52 as it extends toward the chassis 22. The second portion 56 increases in diameter and extends to the second end 50 which is preferably attached to the bearing plate 38 mounted to the chassis 22.

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In operation, air is exhausted or introduced into the air cell 32 such that the air cell 32 expands and unrolls from the piston 34. As the air cell 32 first end 48 has a smaller diameter than the second end 50, the air cell 32 has a tapered or frustro-conical shape when fully inflated. By comparing Figures 3a and 3b one can see the movement of the air spring between deflated and inflated positions. When the air cell 32 is deflated the taper facilitates the air cell 32 obtaining its original rolled or deflated position. As a result of the improved rolling and unrolling of the tapered air cell, the likelihood of inversion or "snapping through" is therefore minimized.

The anti-vacuum system 60 includes one or more orifices having one-way valves that equalize the pressure within the air cell 16 with the surrounding atmospheric pressure if a vacuum condition occurs. When the air cell 32 is pressurized by the gas feed 42, the air cell 16 is at a pressure higher than atmospheric pressure and the orifices remain closed. If a vacuum condition occurs, the orifices open to equalize the pressure.

However, if the unloaded longitudinal member 14 quickly pivots away from the chassis 22, extension of the air cell 16 overwhelms the anti-vacuum system 60. The air cell 16 can then become inverted as the vacuum condition forms within the air cell 16. This typically happens when the longitudinal member 14 falls away from the chassis 22 when the vehicle is lifted. Accordingly, the damper 18 prevents the axle assembly 20 from extending away from the chassis 22 at a speed which overwhelms the anti-vacuum system 60. The anti-vacuum system 60 is thus provided with more time to equalize the pressure within the air cell 16. This further prevents the likelihood of inversion.

The present invention therefore provides an inexpensive air cell with improved rolling and unrolling characteristics while being readily installable to existing suspension systems.

Claim 1 recites an air spring for a vehicle air suspension system. A piston attached to a longitudinal member is pivotally attached to a chassis component for pivotal movement about an axis. A deformable air cell has a first end attached to the piston and a second end attached to the chassis component. The second end has a greater diameter than the first end. The piston is movable to deform the deformable air cell.

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Issues

Is the final rejection of claims 1-3 and 4 under 35 U.S.C. 102(b) proper over U.S. Patent No. 3,913,94 to *Bates*?

Is the final rejection of claims 1-3 and 4 under 35 U.S.C. 103(a) proper over the combined references of U.S. Patent No. 3,913,94 to *Bates* and U.S. Patent No. 4,890,823 to *Koschina*?

Is the final rejection of claims 5 and 6 under 35 U.S.C. 103(a) proper over the combined references of U.S. Patent No. 3,913,94 to *Bates* and U.S. Patent No. 4,890,823 to *Koschinat* and U.S. Patent No. 5,234,203 to *Smith*?

Grouping of Claims

- A. The rejections of Claims 1-6 are contested.
- B. The rejection of claim 5 is separately contested, i.e. claim 5 does not fall with claim 4.
- C. The rejection of Claim 6 is contested.

Patentability Arguments

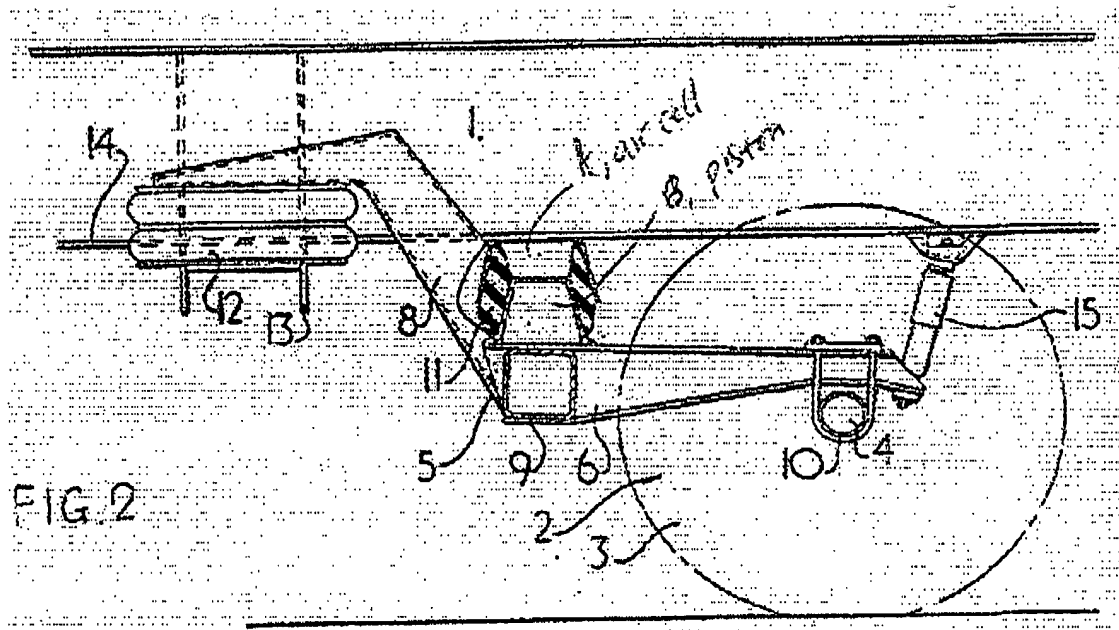
A. The Rejection of Claims 1-3 and 4 Under 35 U.S.C. 102(b) is Improper

Independent claims 1 and 4 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,913,94 to *Bates*. Independent claim 1 and 4 recite an *air cell* having a second end of a greater diameter than said first end or a frustro-conical configuration. *Bates* does not disclose any structure that can be fairly called an "air cell." *Bates* discloses an element 12 which is an air cell of a conventional cylindrical configuration. *Bates* also discloses a frustoconical rubber spring having metal mounts bonded to the rubber. See col. 2, lines 8-11. Item 12 is the air cell; item 11 is not.

As claim 12 is included
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The Examiner, however, attempts to refer to the solid rubber spring 11 as an air cell. The Examiner's annotated Figure 2 is reproduced below.



The Examiner has labeled a seemingly hollow chamber B in the *Bates* part 11 and alleges this would meet the "air cell" limitation. However, the term "air cell" as utilized in this art has a specific meaning. The solid rubber spring 11 of *Bates* is not performing any function as an air cell. As stated in *Bates* at column 2, lines 31-38:

In operation, deflection of the suspension due to vehicle weight causes deflection of the main springs 11 together with compression of the air springs 12. The leveling valve senses this compression and supplies pressurized air to the air springs 12 to cause the adjustment of the air spring back to its initial predetermined height.

At one point, even the Examiner admits the *Bates* does not clearly teach a deformable air cell. *Office Action mailed 09/07/01 paragraph 4*. The claims require such an air cell. This rejection is therefore improper and should be withdrawn because *Bates* simply does not show an **AIR CELL** of a frusto-conical configuration. Claims 1-3 and 4 are thus properly allowable.

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99AUT080**B. The Rejection of Claim claims 1-3 and 4 under 35 U.S.C. 103(a) is improper**

Not p's

Independent claims 1 and 4 stand rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 3,913,94 to *Bates* in combination with and U.S. Patent No. 4,890,823 to *Koschina*. There is no motivation to modify the *Bates* part 11, which is simply a solid rubber spring bonded to a metal mount, with the composite plunger piston structure disclosed by the *Koschinat* patent. *Koschinat* discloses a two-piece plunger piston formed of a composite material, whose two parts support each other and assume specific tasks. The outer plunger piston essentially assumes the normal guiding of the air spring bellows ... the internal truncated conical portion 11 absorbs the pressure and tensile forces. See *Koschinat* Col 3, lines 9-25. That is, the *Bates* part 11 does not require a plunger piston because a plunger piston is only applicable to an air-cell.

Moreover, the composite piston structure disclosed by the *Koschinatis* is applicable to a conventional *cylindrical* air cell bellows as recited in the PRIOR ART Figure 1 illustration. The air cell bellows 24 are not frustro-conical. The claims of the present invention specifically recite a deformable air cell which has a second end having a greater diameter than the first end. The only portion of *Koschinat*, which may conceivably be described as frustro-conical, is the outer surface 16 of the internal truncated conical portion 11. The internal truncated conical portion 11 is a support and is not deformable. The outer surface 16 does not even come in contact with the air cell bellows. Thus, the proposed combination of *Koschinat* with *Bates*, even if proper, cannot disclose or suggest the present invention. Claims 1-3 and 4 are thus properly allowable.

C. The Rejection of claim 5 and 6 under 35 U.S.C. 103(a) is improper

Dependent claim 5 and independent claim 6 recite an anti-vacuum system. *Smith* discloses a completely cylindrical air cell having an anti-vacuum system. There is no proper motivation to combine *Smith* and *Koschinat* with *Bates*. There is certainly no reason to modify the *Bates* part 11, which is simply a solid rubber spring bonded to a metal mount, with any of the air spring structure allegedly taught by the *Smith* and *Koschinat* patents. Combining a simple rubber and metal spring with an anti-vacuum system is nonsensical. At best, the Examiners proposed combination would have no effect whatsoever upon the base reference. In other words, a solid

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rubber spring does not expand or deflate. There is therefore no motivation to provide an anti-vacuum system. This rejection is improper and should be withdrawn.

Closing

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully Submitted,
CARLSON, GASKEY & OLDS, P.C.

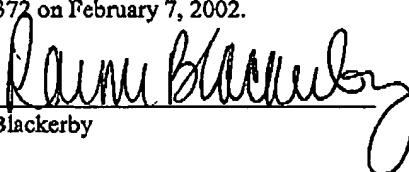


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Dated: February 7, 2002

CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, TC 3600, After Final, 703-872-9372 on February 7, 2002.



Raimi Blackerby

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CLAIM APPENDIX

1. An air spring for a vehicle air suspension system comprising:
a piston attached to a longitudinal member pivotally attached to a chassis component for pivotal movement about an axis; and
a deformable air cell having a first end attached to said piston and a second end attached to said chassis component, said second end having a greater diameter than said first end, said piston moving to deform said deformable air cell.
2. The air spring as recited in claim 1, wherein said air cell is tapered between said first end and said second end.
3. The air spring as recited in claim 1, wherein said air cell is of a frustro-conical configuration.
4. An air suspension system for a vehicle comprising:
a longitudinal member pivotally attached to a chassis component for pivotal movement about an axis;
an axle assembly mounted to said longitudinal member; and
an air spring having a frustro-conical air cell and a piston, said air spring disposed between said longitudinal member and said chassis component, said air cell having a first end attached to said piston and a second end attached to said chassis component.
5. The system as recited in claim 4, wherein said air cell includes an anti-vacuum system and a damper disposed between said axle assembly and said chassis component, said damper extendable at a rate which allows said anti-vacuum system to equalize a pressure within said air cell with atmospheric pressure as said longitudinal member pivots about said axis away from said chassis component.

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6. An air suspension system for a vehicle comprising:
- a longitudinal member pivotally attached to a chassis component for pivotal movement about an axis;
 - an axle assembly mounted to said longitudinal member;
 - air spring having a deformable frusto-conical air cell and a piston, said air spring disposed between said longitudinal member and said chassis component, said air cell having a first end attached to said piston and a second end attached to said chassis component;
 - an anti-vacuum system within said air spring, said anti-vacuum system operable to equalize a pressure within said air cell with atmospheric pressure as said longitudinal member pivots about said axis away from said chassis component; and
 - a damper disposed between said axle assembly and said chassis component, said damper extendable at a rate which allows said anti-vacuum system to equalize a pressure within said air cell with atmospheric pressure as said longitudinal member pivots about said axis away from said chassis component and said piston moving to deform said deformable air cell.

09/25/2003 THU 12:41 - FAX 1249888363 Carlson, Gaskey & Olds

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